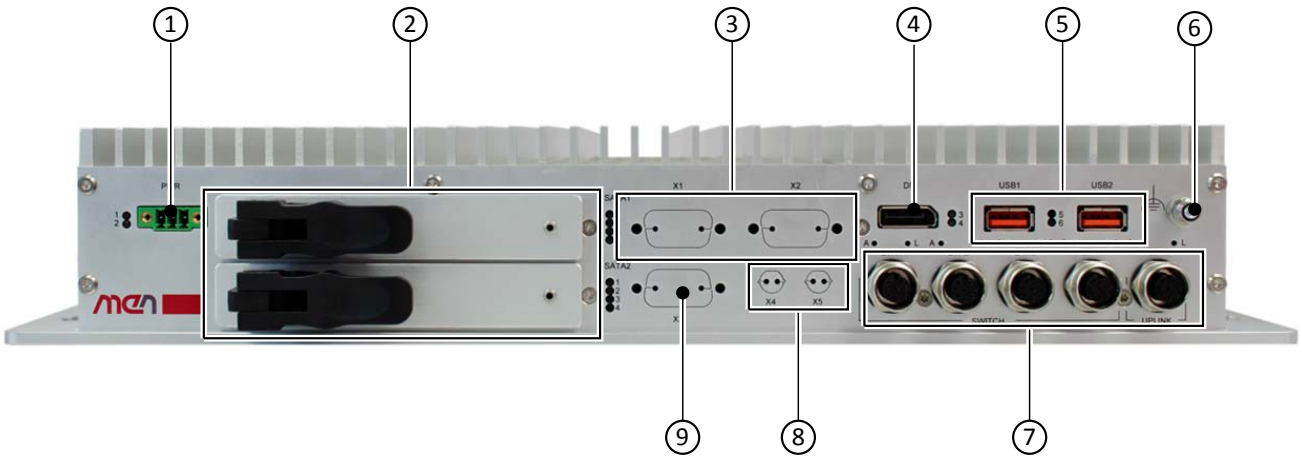
BL70S – Rugged Box PC for Storage Applications (Intel®)

- **Intel® Core™ i7, 3rd generation**
- **Up to 16 GB DDR3 DRAM soldered, ECC**
- **RAID 0/1, hot-pluggable on 2 HDD/SSD shuttles**
- **4-port Gb Ethernet switch with PoE**
- **1 Gb Ethernet uplink**
- **1 PCI Express® Mini Card slot with 2 SIM slots for WLAN, GSM (2G), UMTS (3G), LTE (4G), GPS or GLONASS functionality**
- **2 slots for IBIS, RS232, RS485, RS422**
- **24 and 36 VDC nom. (10 to 50.4 V) class S2 PSU, with ignition**
- **-40 to +85°C operating temperature, fanless**
- **Conformal coating of internal components**
- **Compliant to EN 50155 (railways)**
- **Compliant to ISO 7637-2 (E-mark for automotive)**

The BL70S is a fanless, maintenance-free box computer that has been designed for embedded storage applications such as content servers or video recorders. It offers two external SATA shuttles with hot-plugging support.
On the front of the rugged BL70S as many as five Gigabit Ethernet interfaces are accessible. Four of these ports share one Gigabit Ethernet port from the chipset via a switch, while one port is used exclusively as Gigabit Ethernet uplink. The four ports routed over the switch support Power-over-Ethernet.
One PCI Express® Mini Card slot with two SIM card slots offers the possibility to implement the wide range of functionality available on this form factor. This includes for example mobile service standards GSM (2G), UMTS (3G), LTE (4G) and derivates, wireless communication standards WLAN / Wi-Fi IEEE 802.11 and derivates as well as positioning systems GPS or GLONASS.
The BL70S is powered by an Intel® Core™ i7-3517UE CPU, running at 1.7 GHz. Other processors of the 3rd generation Intel® Core™ i7 family can be used which makes for high scalability in CPU (single/dual/quad core) performance.
The BL70S is equipped with 4 GB of DDR3 SDRAM and offers microSD™ card and mSATA slots. The system is designed for fanless operation at temperatures from -40 to +70°C (+85°C for up to 10 minutes), its special aluminum housing with cooling fins serves as a heat sink for the internal electronics and in this way provides conduction cooling.
The BL70S supports one DisplayPort® interface with a resolution of 2560x1600. In addition, a multitude of other I/O is available at the front panel, including two USB 2.0 and variable slots for legacy serial I/O (e.g. RS232) or CAN bus.
The BL70S comes with its own integrated class S2 wide-range power supply with 24 and 36 VDC nominal input voltage (10 to 50.4 V) and a power consumption of 30 W and is in compliance with EN 50155 and ISO 7637-2 (E-mark for automotive). The power can be switched on and off using an ignition signal on the power connector, and a run-down time after switching off the power can be adjusted by software.
The various CPU options with the available selection of external interfaces makes for an extremely flexible system design that can quickly be tailored to a vast number of applications.

Diagram



1. PSU connector (10V-50.4V)
2. 2 Hard Disk Shuttles
3. 2 SA-Adapter cutouts for RS232, RS485/422, CAN, IBIS master, IBIS slave or GPIO
4. 1 DisplayPort
5. 2 USB 2.0
6. Earthing Stud
7. 5 Gigabit Ethernet (4-port Ethernet switch and one uplink port)
8. 2 antenna connector cutouts for PCI Express Mini Card
9. Cutout for HD Audio

Technical Data

CPU	■ Intel® Core™ i7-3517UE □ 1.7 GHz processor core frequency □ 2.8 GHz maximum turbo frequency ■ Chipset □ QM77 Platform Controller Hub (PCH)
Memory	■ 4 MB last level cache integrated in i7 processor ■ 4 GB SDRAM system memory □ Soldered □ DDR3 with ECC support □ Up to 1066 MHz memory bus frequency
Mass Storage	■ One microSD™ card slot ■ One mSATA slot □ SATA Revision 3.x support □ Transfer rates up to 600 MB/s (6 Gbit/s) ■ Serial ATA (SATA) □ Two external shuttles for 2.5" SATA HDD/SSD drive □ SATA Revision 2.x support □ Transfer rates up to 300 MB/s (3 Gbit/s) □ Hot-pluggable (with independent devices) □ Status LEDs
Graphics	■ Integrated in processor and chipset ■ Maximum resolution: 2560 x 1600 pixels ■ Via one DisplayPort® interface
Ethernet Uplink	■ One Gigabit Ethernet uplink □ Via one M12 connector at the front
Gigabit Ethernet Switch Functionality	■ Four 10/100/1000Base-T ports at front panel (Electrical isolation: 1500 Vrms) □ Via four M12 connectors ■ High-speed non-blocking, store-and-forward switching ■ Port configuration: copper, 10/100 and 1000 Mbit/s ■ Auto-negotiation / Auto MDI/MDIX crossover on all ports ■ Layer2-based Policy Control List ■ 8K MAC address lookup table with automatic learning and aging ■ Supported Protocols and Standards □ Ethernet flow control (IEEE 802.3x) □ Link aggregation LACP / EtherChannel (IEEE 802.3ad, 2005) □ Priority-based switching, Quality of Service/DiffServ, tagged frames, Layer2-based 801.1Q VLAN-ID packet routing (IEEE 802.1p) □ Port-based authentication on registered MAC Address Lists □ Power over Ethernet support (IEEE 802.3af / IEEE 802.3at, Type 1) □ VLAN/port-based VLANs GVRP/MVRP (IEEE 802.1Q Rev D5.0, 2005) ■ Power over Ethernet functionality □ PSE (Power Sourcing Equipment) function □ Supports supply classes 0 to 4 □ Supplies up to four PD devices (up to 28 W total) □ 1x 25 W PoE+ (Class 4) □ 2x 12.96 W (Class 3 / class 0) □ 4x 6.5 W (Class 2)

Technical Data

Front I/O	■ 1 DisplayPort® 1.1a interface □ AUX channel and hot plug detection ■ 2 USB 2.0 □ Via Series A connector ■ 2 SA-Adapter slots for legacy serial I/O □ For RS232, RS422/485, CAN, IBIS master, IBIS slave, GPIO ■ 24 status LEDs □ 10 for Ethernet link and activity status □ 2 for general board status □ 4 user LEDs □ 8 SATA LEDs
1 PCI Express® Mini Card slot	■ For functions such as □ Mobile service standards: GSM (2G), UMTS (3G), LTE (4G) and derivates □ Wireless communication: WLAN / WiFi IEEE 802.11 and derivates □ Positioning: GPS, GLONASS, GALILEO ■ 2 SIM card slots (Dual SIM) ■ PCI Express® and USB interface
Real-Time Clock	■ Buffered by Gold Cap for up to 72 h
Electrical Specifications	■ Isolation voltage 1,500 VDC against shield ■ Supply voltage: □ 24V and 36V nominal input voltage according to EN50155 □ 24V nominal input voltage according to ISO 7637-2 (E-mark) requirements □ 10 to 50.4 V input voltage range □ EN 50155 power interruption class S2 □ Ignition signal at the front ■ Power consumption: tbd
Mechanical Specifications	■ Dimensions: Height 66mm x Width 400mm x Length 240mm ■ Weight: □ Box PC in standard housing: approx. 4.25 kg □ Box PC in 19" insertion frame: approx. 5.5 kg ■ IP20 protection
Environmental Specifications	■ Temperature range (operation): □ -40°C to 70°C (screened), with up to 85°C for 10 minutes according to class Tx (EN 50155) □ Fanless operation ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300 m to +3,000 m ■ Shock: 50 m/s², 30 ms (EN 61373) ■ Vibration (function): 1 m/s², 5 Hz - 150 Hz (EN 61373) ■ Vibration (lifetime): 7.9 m/s², 5 Hz - 150 Hz (EN 61373) ■ Conformal coating of internal components
MTBF	■ 203 819 h @ 40°C according to IEC/TR 62380 (RDF 2000)
Safety	■ Flammability □ UL 94V-0 ■ Fire Protection □ EN 45545-2 ■ Electrical Safety □ EN 50153 □ EN 50155
EMC Conformity (Automotive)	■ ECE R10 (E-mark) ■ ISO 10605 (ESD)

Technical Data

EMC Conformity (Railway)	■ EN 50121-3-2
BIOS	■ InsydeH2O™ UEFI Framework
Software Support	■ Windows® 7 ■ Windows® Embedded Standard 7 ■ Linux ■ For more information on supported operating system versions and drivers see Downloads.

Configuration & Options

Options

CPU	■ Intel® Core™ i7-3517UE □ Dual Core, 1.7 GHz, 4 MB Cache, 17 W ■ Intel® Core™ i3-3217UE □ Dual Core, 1.6 GHz, 3 MB Cache, 17 W ■ Intel® Celeron® 1047UE □ Dual Core, 1.4 GHz, 2 MB Cache, 17 W ■ Intel® Celeron® 927UE □ Single Core, 1.5 GHz, 1 MB Cache, 17 W ■ Intel® Celeron® 827E □ Single Core, 1.4 GHz, 1.5 MB Cache, 17 W
Memory	■ System RAM □ 2 GB, 4 GB, 8 GB or 16 GB ■ SATA hard-disk/solid state drive (mounted within housing)
I/O	■ Ethernet □ Five Fast Ethernet interfaces on five M12 connectors or □ One Gigabit Ethernet uplink and four Fast Ethernet interfaces on five M12 connectors ■ HD audio interface □ HD audio codec □ Audio stereo in □ Audio stereo out □ SPDIF out ■ Antenna connectors □ Various types available on the market (SMA, reverse SMA, QMA, FME...) ■ SA-Adapters □ Serial interfaces: RS232, RS422/485, GPIO □ Fieldbus: IBIS master, IBIS slave, CAN bus
Electrical Specifications	■ Input voltages of 48V, 72V and 110V can be implemented on request

As the product concept is very flexible, there are many other configuration possibilities. Please contact our sales team if you do not find your required function in the options. Please note that some of these options may only be available for large volumes.

Ordering Information

Standard BL70S Models	**09BL70S00**	BL70S, storage box computer including 2 HDD/SDD shuttles, 24 VDC PSU, Intel® Core™ i7-3517UE, 1.7 GHz, 4 GB RAM, SD card slot, mSATA slot, 1x DisplayPort®, 1x Gb Ethernet and 4x Gb Ethernet with PoE via switch, 2 USB, 2x SA-Adapter slot (UARTs, fieldbuses), 1x PCI Express® Mini card slot, 2 x SIM card slots, -40..+70(+85)°C screened, conformal coating, IP40, EN 50155, ISO 7637-2 (E-mark)
Related Hardware	**08AE63-00**	DisplayPort® to LVDS converter, temperature sensor, ambient light, touch input, key control, input voltage 12V..24V, -40°..+85°C screened
	09BL50S00	BL50S, storage box computer including 2 HDD/SDD shuttles, 24 VDC PSU, AMD Dual Core T48N, 1.4 GHz, 2 GB RAM, SD card slot, mSATA slot, 1x DisplayPort®, 5x Gb Ethernet, 2x USB, 1x SA-Adapter slot (UARTs, fieldbuses), 1x PCI Express® Mini card slot, 2x SIM card slot, -40..+70(+85)°C screened, conformal coating, IP20, EN 50155, ISO 7637-2 (E-mark)
Memory	**0710-0038**	HDD SATA 2.5", 100 GB, 1.5GB/s, 4200rpm, -10°..+70°C
	0710-0044	HDD SATA 2.5", 500 GB, 5400rpm, 0...+60°C, 100 x 70 x 6,8 mm, 24 hours / 7 days
	0751-0051	SSD mSATA, 8 GB, -40..+85°C
	0754-0007	SSD SATA 256 GB, 2.5" MLC, 0..+70°C
	0754-0008	SSD SATA 160 GB, MLC, 2,5", 0..+70°C
PCI Express® Mini Cards	**0799-0006**	WLAN PCI Express® MiniCard DNXA-116, operating temperature -40..+85°C (screened), storage temperature -40°..+85°CNote: when using wireless modules the R&TTE Guideline of the EU has to be observed. See the R&TTE website For the module's driver contact MEN's support team
	0799-0007	MC7304 PCI Express® MiniCard, full-size on USB: LTE, DC-HSPA+, HSPA+, HSDPA, HSUPA, WCDMA, GSM, GPRS, EDGE, and GNSS, -40°..+85°C operation temperatureNote: when using wireless modules the R&TTE Guideline of the EU has to be observed. See the R&TTE website For the module's driver contact MEN's support team
	15PX01-01	GLONASS & GPS PCI Express® MiniCard (full size), -40..+85°C, conformal coating
	15PX04-01	Audio interface for mobile wireless cards, with SIM card holder, -40..+85°C screened, conformal coating
	15PX50-00	PCI Express® Mini Card, CANopen Slave interface, Hilscher
	15PX53-00	PCI Express® Mini Card, Profibus Slave interface, Hilscher
SA-Adapters	**08SA01-11**	RS232, not optically isolated, -40..+85°C screened, conformal coating
	08SA02-27	RS422/485, full duplex, optically isolated, -50°..+85°C screened, conformal coating
	08SA03-15	1 RS232, optically isolated, -40..+85°C screened, conformal coating
	08SA08-04	1 CAN interface, D-Sub connector, optically isolated, -40..+85° screened, conformal coating
	08SA15-05	8 digital I/O channels, -50..+85°C with qualified components, conformal coating, no RoHS
	08SA22-04	1 IBIS slave interface, isolated, -40..+85°C screened, conformal coating
	08SA24-03	1 intelligent IBIS master interface (extended format), isolated, -40..+85°C screened, conformal coating
	08SA25-01	GPS receiver, SMA antenna, isolated, -40..+85°C with qualified components, conformal coating

Ordering Information

Miscellaneous Accessories	**05BC00-00**	Starter Kit for BoxPC: 1x AC/DC power supply, 1x DisplayPort® to DVI adapter (active), 2x M12 to RJ45 Gbit Ethernet cable, 4x HF cable with U.FL plug to RP-SMA plug
	05BL00-00	2.5" HDD/SSD shuttle mechanics for box PCs
	05BL01-00	19" insertion frame for Box PCs (BL)
	0780-0005	DisplayPort® to DVI-D adapter, 20 cm
	0780-0006	Active DisplayPort® (DP) to single link DVI-D adapter, 20cm, max. resolution 1920x1200, AMD / ATI Eyefinity technology
	0781-0002	HF antenna cable with U.FL connector to RP-SMA connector, 200 mm
Software: Linux	This product is designed to work under Linux. See below for all available separate software packages.	
	13MD05-90	MDIS5 System (and Device Driver) Package (MEN) for Linux. This software package includes most standard device drivers available from MEN.
	13MM02-90	Linux driver (MEN) for RX8581 real-time clock for CB70C, F75P, MM2, SC24, SC25, BC50M, BC50I, BL50W, BL50S, BL70W and BL70S. Please note that this driver is already included in upstream Linux kernels starting from 3.14!
	13SC24-91	Linux tool (MEN) for UART mode setting for SC24, SC25, BC50M, BC50I, BL50W, BL50S, BL70W and BL70S
	13Z016-06	MDIS5 driver (MEN) for 16Z029_CAN (CANopen master)
	13Z100-91	Linux FPGA update tool (MEN)
Software: Windows®	This product is designed to work under Windows®. See below for all available separate software packages.	
	10Y000-78	Windows® Embedded Standard 7 BSP for F19P, F21P, F22P, F23P, G20, G22, CB70C, CB70, XM2, MM2, BC50M, BC50I, BL50W, BL50S, BC70M, BL70S, BL70W, BL70E, DC2, DC13, F205, F206, F210, F215, F216, G215, P506, P507 and P511
	13SC24-77	Windows® Installset (MEN) for SC24, SC25, BC50M, BC50I, BL50W, BL50S, BL70W and BL70S (Includes all free drivers developed by MEN for the supported hardware.)
	13T010-70	Windows® 32-bit network driver (Intel®) for XM1, XM1L, XM2, MM2, CB70C, F11S, F18, F18E, F19P, F21P, F22P, G20, G22, GM1, GM2, GM3, G211, G211F, SC24, BC50I, BC50M, BL50W, BL50S, BL70W and BL70S
	13T020-70	Windows® 64-bit network driver (Intel®) for F18, F18E, F19P, F21P, F22P, G20, G22, GM1, GM2, GM3, G211, G211F, XM2, CB70C, SC24, BC50I, BC50M, BL50W, BL50S, BL70W and BL70S
	13T034-70	Windows® 7/8 32-bit graphics driver (Intel®) for F22P, G22, CB70C, SC25, BL70W and BL70S
	13T035-70	Windows® 7/8 64-bit graphics driver (Intel®) for F22P, G22, CB70C, SC25, BL70W and BL70S
	13T037-70	HD Audio Driver (VIA) for SC24, SC25, BC50M, BL50W, BL50S, BL70W and BL70S
	13Y018-70	Windows® 64-bit FPGA update tool (MEN)
	13Y021-70	Windows® ERTC/SMB support package

For operating systems not mentioned here contact MEN sales.

Ordering Information

Documentation	Compare Chart Standard and Custom Box PCs » Download	
	20BL70S00	BL70S User Manual
	20BL70SER	BL70S Errata

Contact Information

Germany

MEN Mikro Elektronik GmbH
Neuwieder Straße 3-7
90411 Nuremberg
Phone +49-911-99 33 5-0
Fax +49-911-99 33 5-901

info@men.de
www.men.de

France

MEN Mikro Elektronik SAS
18, rue René Cassin
ZA de la Châtelaine
74240 Gaillard
Phone +33 (0) 450-955-312
Fax +33 (0) 450-955-211

info@men-france.fr
www.men-france.fr

USA

MEN Micro Inc.
860 Penllyn Blue Bell Pike
Blue Bell, PA 19422
Phone (215) 542-9575
Fax (215) 542-9577

sales@menmicro.com
www.menmicro.com

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